

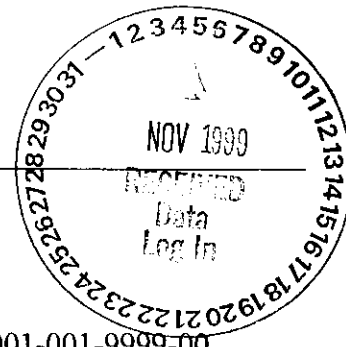


Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9909L126
SDG/SAF #: H0535/B99-085

W.O. #: 10985-001-001-9999-00
Date Received: 09-17-99



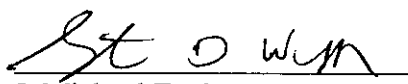
SEMIVOLATILE

One (1) water sample was collected on 09-15-99.

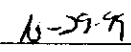
The sample and its associated QC samples were extracted on 09-21-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B TCL Semivolatile target compounds on 10-04-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in these samples.
4. These samples were spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the samples.
5. All surrogate recoveries were within USEPA QC limits.
6. Two (2) of eleven (11) matrix spike recoveries were outside USEPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. Two (2) of eleven (11) blank spike recoveries were outside USEPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

pef\group\data\bna\tnu09126.doc


Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

001

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 99MS081

Initiator: J. Durbin RFW Batch: 9909L126 Parameter: BNA
 Date: 10-5-99 Samples: MSD, BS Matrix: water
 Client: TNU Hanford Method: SW846/MCA/WW/CLP/ Prep Batch: 99LE11SD
899-085 cont

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other _____

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle) ...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

MSD + BS yielded very low recoveries for
4-nitrophenol + pentachlorophend

2. Known or Probable Causes(s)

possible problem with prep

3. Discussion and Proposed Action

Other Description: Narrate

☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

[Signature] 10/7/99

4. Project Manager Instructions...signature/date: _____

☐ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
 Date/Person _____
☐ Add
☐ Cancel

5. Final Action...signature/date: 10/25/99

Other Explanation:

☐ Verified re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of <u>Completed</u> SDR	Route	Distribution of <u>Completed</u> SDR
<input checked="" type="checkbox"/>	X Initiator	<input type="checkbox"/>	Metals: Doughty
<input checked="" type="checkbox"/>	X Lab Manager: M. Taylor	<input type="checkbox"/>	Inorganic: Perrone
<input checked="" type="checkbox"/>	X Project Mgr: Stone/Carey/Schrenkel/Johnson	<input type="checkbox"/>	GC/LC: Schnell
<input checked="" type="checkbox"/>	X Section Mgr: Wesson/Daniels	<input type="checkbox"/>	MS: LeMin/Taylor
<input checked="" type="checkbox"/>	X QA (file): Racioppi	<input type="checkbox"/>	Log-in: Toder
<input type="checkbox"/>	Data Management: Feldman	<input type="checkbox"/>	Admin: Soos
<input type="checkbox"/>	Sample Prep: Schnell/Doughty/Kauffman	<input type="checkbox"/>	Other: _____

Semivolatiles by GC/MS, HSL List

CCO

Page: 1a

[illegible]

*= Outside of EPA CLP QC limits.

Cust ID:	BOWCP8	BOWCP8	BOWCP8	SBLKDI	SBLKDI BS
RFW#:	001	001 MS	001 MSD	99LE1150-MB1	99LE1150-MB1
2-Chloronaphthalene	10 U	20 U	20 U	10 U	10 U
2-Nitroaniline	25 U	50 U	50 U	25 U	25 U
Dimethylphthalate	10 U	20 U	20 U	10 U	10 U
Acenaphthylene	10 U	20 U	20 U	10 U	10 U
2,6-Dinitrotoluene	10 U	20 U	20 U	10 U	10 U
3-Nitroaniline	25 U	50 U	50 U	25 U	25 U
Acenaphthene	10 U	86 %	85 %	10 U	73 %
2,4-Dinitrophenol	25 U	50 U	50 U	25 U	25 U
4-Nitrophenol	25 U	32 %	0 * %	25 U	8 * %
Dibenzofuran	10 U	20 U	20 U	10 U	10 U
2,4-Dinitrotoluene	10 U	99 * %	84 %	10 U	69 %
Diethylphthalate	10 U	20 U	20 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	20 U	20 U	10 U	10 U
Fluorene	10 U	20 U	20 U	10 U	10 U
4-Nitroaniline	25 U	50 U	50 U	25 U	25 U
4,6-Dinitro-2-methylphenol	25 U	50 U	50 U	25 U	25 U
N-Nitrosodiphenylamine (1)	10 U	20 U	20 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	20 U	20 U	10 U	10 U
Hexachlorobenzene	10 U	20 U	20 U	10 U	10 U
Pentachlorophenol	25 U	73 %	17 %	25 U	7 * %
Phenanthrene	10 U	20 U	20 U	10 U	10 U
Anthracene	10 U	20 U	20 U	10 U	10 U
Carbazole	10 U	20 U	20 U	10 U	10 U
Di-n-butylphthalate	1 J	2 J	2 J	10 U	10 U
Fluoranthene	10 U	20 U	20 U	10 U	10 U
Pyrene	10 U	94 %	83 %	10 U	88 %
Butylbenzylphthalate	10 U	20 U	20 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	20 U	20 U	10 U	10 U
Benzo(a)anthracene	10 U	20 U	20 U	10 U	10 U
Chrysene	10 U	20 U	20 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10 U	5 J	20 U	10 U	3 J
Di-n-octyl phthalate	10 U	20 U	20 U	10 U	10 U
Benzo(b)fluoranthene	10 U	20 U	20 U	10 U	10 U
Benzo(k)fluoranthene	10 U	20 U	20 U	10 U	10 U
Benzo(a)pyrene	10 U	20 U	20 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	20 U	20 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	20 U	20 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	20 U	20 U	10 U	10 U

(1) - Cannot be separated from Diphenylamine. * = Outside of EPA CLP QC limits.

000

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WCP8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER

Lab Sample ID: 9909L126-001

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: A100410

Level: (low/med) LOW

Date Received: 09/17/99

% Moisture: decanted: (Y/N)

Date Extracted: 09/21/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 10/04/99

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 3

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.	UNKNOWN	7.77	2	J
2.	UNKNOWN	7.94	3	J
3.	UNKNOWN	23.13	4	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKDI

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER

Lab Sample ID: 99LE1150-MB1

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: A100408

Level: (low/med) LOW

Date Received: 09/21/99

% Moisture: decanted: (Y/N)

Date Extracted: 09/21/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 10/04/99

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.				

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWCP8	001	W	99LE1150	09/15/99	09/21/99	10/04/99
BOWCP8	001 MS	W	99LE1150	09/15/99	09/21/99	10/04/99
BOWCP8	001 MSD	W	99LE1150	09/15/99	09/21/99	10/04/99

LAB QC:

SBLKDI	MB1	W	99LE1150	N/A	09/21/99	10/04/99
SBLKDI	MB1 BS	W	99LE1150	N/A	09/21/99	10/04/99

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone
wet chem



Special instructions:

Page # B99-085

9/23/99 - INH_3 added to cool per client co.

COMPOSITE WASTE

DATE/REVISIONS:

UGCSC = 1-propanol, Ethanol

met ①₂ = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,

3. Ni, V, Zn, Be

$\text{AnagD}_4 = \text{ICCL}, \text{ICFL}, \text{ICNO}_2, \text{ICNO}_3, \text{ICPO}_4,$

5. IC504, LPH, INH3N

6. Run matrix QC

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or
Hand Delivered ☐

Airbill # ~~1~~

2) Ambient or Chilled
3) Received in Good
Condition (Y) or N

4) Labels Indicate Property Preserved

Property reserved
(Y) or N

5) Received Within Holding Times

Y OF (N)

COC Tape was:

1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample ☒ Y or N

4) Unbroken on
Sample (Y) or N

COC Record Present
Upon Sample Rec't

Upon Sample Rec't
H (Y) or N

○ Cooler Temp 4.1 °C

Discrepancies Between
Samples Labels and
COC Record? ☒ Y or ☐ N
NOTES: Sulfur both

not 500 mL as chain indicate

42357952951

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS RECORD

REFERENCE DOCUMENT NO.:

SPL-99-0918

CORRESPONDING REFERENCE DOCUMENT NO.:

PAGE 1 OF 1

FLUOR DANIEL
FERNALDP.O. BOX 538704
CINCINNATI, OH 45253-8704

ORIGINAL REF NO.:

NA

RELEASE NO.:

1000019758

PROJECT NO.:

20200-PSP-0005

FOR SAMPLE RELATED PROBLEMS

ACS CONTACT / PHONE:

Audrey Hannum 4943

REQUIRED REPORT DATE / LAB TAT:

21 DAYS

CONTRACT PURCHASE ORDER / TASK ORDER NO.:

96500217-034

SAMPLE SHIPMENT DATE:

9-15-99

PROJECT CONTACT / PHONE:

Christine Messerly 4619

RECEIVING LAB NAME:

RECRA

SAMPLE SHIPPER (Print):

Ron Houston

CHARGE NO.:

5031

LOT MARKING NO.:

NA

RECEIVING LAB ADDRESS:

LIONVILLE, PA, 19341

OFF-SITE LAB CONTACT:

BOB CAREY

SAMPLING TEAM (Print) & GROUP NAME / PHONE:

JOYCE GRACE/EM/SMMP/4848/K.H. Ry EM 3267

SAMPLING TEAM (Signature) & Badge No.:

Joyce Grace 10781/K.H. Ry 9388

John VANDINE

Bobb Minger

De Vender 5536/M.L. 76551

ITEM NO.	SAMPLE NUMBER		SAMPLE MATRIX	COMBUSTION	FACILITY	COLLECTION		CONTAINER		PRESERVATION	ANALYSES REQUESTED	OFF-SITE
	FACTS ID	CUSTOMER ID / SAMPLE POINT				DATE	TIME	TYPE	VOL.		If more space is required, use the SPECIAL INSTRUCTIONS block.	
1	20036161712483-6B-L	S	SOIL	✓	N	09/13/006		G	60	1 Cool 40°C	B	4Y
2	2003616133A4A-SUB-TB5	W	WATER	✓	N	09/13/0830		G	40	3 Cool 40°C	B	4Y
3	No samples below this line Jeg 09/13/99											
4												
5												
6												
7												
8												
9												
10												

SPECIAL INSTRUCTIONS:

* TAL I = Total volatiles ** All Trip Blanks have bubbles

RELINQUISHED			RECEIVED		
ITEM / REASON	RELINQUISHED BY (Signature) / AFFILIATION	BADGE NO.	DATE	TIME	RECEIVED BY (Signature) / AFFILIATION
1, 2, Release to SPL	Ry EM/SMMP?	76551	9/14/99	1307	Karen Heffner/SPL
1, 2 TO SHIP	JOYCE GRACE SPL	76719	9-15-99	1300	gerson

WHITE

ON-SITE - RELEASE FILE / OFF-SITE ANALYTICAL LAB - RETURN TO FEMP

YELLOW

ON-SITE - DISTRIBUTE AS NEEDED / OFF-SITE ANALYTICAL LAB - RETURN TO FEMP

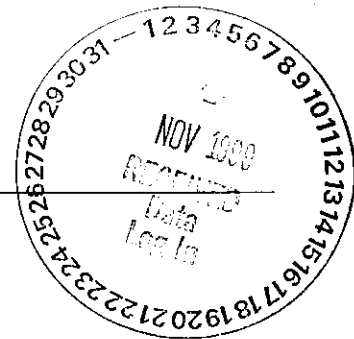
BLUE

SAMPLING TECH / PROJECT FILE



Chemical and Environmental Measurement Information

**Recra LabNet Philadelphia
Analytical Report**



Client: TNU HANFORD B99-085
RFW #: 9909L126
SDG/SAF#: H0535/B99-085

W.O. #: #: 10985-001-001-9999-00
Date Received: 09-17-99

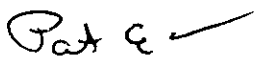
GC SCAN

The set of samples consisted of two (2) water samples collected on 09-15-99.

The samples and their associated QC samples were prepared on 09-23-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-27-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The samples were packaged and stored as specified in the method protocol; the cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
5. Surrogates were not used for this analysis.
6. The blank spike recovery was within advisory control limits of 50%-150%.
7. All matrix spike recoveries were within advisory control limits of 50%-150%.


J. Michael Taylor

Vice President
Philadelphia Analytical Laboratory

10-15-99
Date

r:\share\lcl\gcscan\09-126.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

GC SCAN

RFW Batch Number: 9909L126

Client: TNU-HANFORD B99-085

Work Order: 10985-001-001-9999-00

Page: 1

	Cust ID:	BOWCP8	BOWCP8	BOWCP8	BOWCP9	BLK	BLK BS
Sample	RFW#:	001	001 MS	001 MSD	002	99LLC142-MB1	99LLC142-MB1
Information	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
n-Propyl Alcohol		5.0 U	92 %	104 %	5.0 U	5.0 U	91 %
Ethanol		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

10/4/94

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of Advisory limits.

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCP8	001	W	99LLC142	09/15/99	09/23/99	09/27/99
B0WCP8	001 MS	W	99LLC142	09/15/99	09/23/99	09/27/99
B0WCP8	001 MSD	W	99LLC142	09/15/99	09/23/99	09/27/99
B0WCP9	002	W	99LLC142	09/15/99	09/23/99	09/27/99

LAB QC:

BLK	MB1	W	99LLC142	N/A	09/23/99	09/27/99
BLK	MB1 BS	W	99LLC142	N/A	09/23/99	09/27/99

Handwritten signature

9909L126

Custody Transfer Record/Lab Work Request Page 1 of 1

A11

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

⑧ perone
wet chem

Client <u>Tru Hanford B99-085</u>				Refrigerator # <u>1 6</u>		<u>6</u>		<u>6</u>		<u>6</u>		<u>6</u>		<u>6</u>		<u>6</u>	
Est. Final Proj. Sampling Date _____				#/Type Container		Liquid <u>3V 2AG</u>		<u>3P</u>		<u>1P</u>		<u>1P</u>		<u>1P</u>		<u>1P</u>	
Project # <u>10985-001-001-9999-00</u>				Solid _____		Solid _____		Solid _____		Solid _____		Solid _____		Solid _____		Solid _____	
Project Contact/Phone # _____				Volume		Liquid <u>40ml 1L</u>		<u>1L</u>		<u>1L</u>		<u>1L</u>		<u>1L</u>		<u>1L</u>	
RECRA Project Manager <u>OT</u>				Solid _____		Solid _____		Solid _____		Solid _____		Solid _____		Solid _____		Solid _____	
QC <u>spec</u> Del <u>std</u> TAT <u>30 day</u>				Preservatives		<u>WNO3</u>		<u>WNO3</u>		<u>WNO3</u>		<u>WNO3</u>		<u>WNO3</u>		<u>WNO3</u>	
Date Rec'd <u>9-17-99</u> Date Due <u>10/17/99</u>				ANALYSES REQUESTED →		ORGANIC		INORG		Metal		CN		Sulfide		IC Union	
Account # _____				VOA		BNA		Pest/PCB		Herb		Metal		CN		Sulfide	
MATRIX CODES:				Lab ID		Client ID/Description		Matrix QC Chosen (✓)		Matrix		Date Collected		Time Collected		RECRA LabNet Use Only	
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP WI - Wipe X - Other F - Fish				MS		MSD		MS		MSD		MS		MSD		MS	
001 BOWCP8				✓		✓		✓		✓		✓		✓		✓	
002 BOWCP9				✓		✓		✓		✓		✓		✓		✓	

Special Instructions:

saf # B99-085

9/23/99- 1NH3 added to 001 per client cc.

COMPOSITE
WASTE

DATE/REVISIONS:

OGCSC = 1-propanol, Ethanol

Met ① = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,

3. Ni, V, Zn, Be

Ang ① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,

5. ICSEA, 1PH, 1NH3N

6. Run matrix QC

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or
Hand Delivered _____Airbill # *2) Ambient or Chilled3) Received in Good
Condition ☒ or N4) Labels Indicate
Properly Preserved
☒ or N

5) Received Within

Holding Times IC, PHY or N

COC Tape was:

1) Present on Outer
Package ☒ or N2) Unbroken on Outer
Package ☒ or N3) Present on Sample
☒ or N4) Unbroken on
Sample ☒ or NCOC Record Present
Upon Sample Rec't☒ or NTemp. 4.1 °CDiscrepancies Between
Samples Labels and
COC Record? ☒ or NNOTES: Sulfide bottle + 1L
not 500 mL as chain indicatesRelinquished
byReceived
by

Date

Time

Relinquished
byReceived
by

Date

Time

Fed Ex Jimmy 9-17-99 1020

ORIGINAL
REWRITTEN

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS RECORD

FLUOR DANIEL
FERNALDP.O. BOX 538704
CINCINNATI, OH 45253-8704

ORIGINAL MEF NO.: NA

REFERENCE DOCUMENT NO.: SPL-99-0918

CORRESPONDING REFERENCE DOCUMENT NO.:

PAGE 1 OF 1

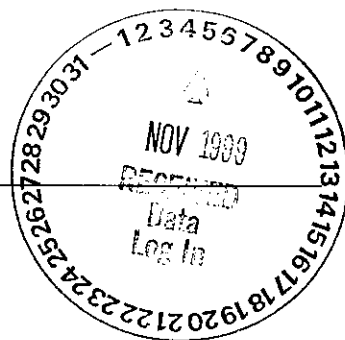
RELEASE NO.: 1000019758	PROJECT NO.: 20200-PSP-0005	FOR SAMPLE RELATED PROBLEMS ACS CONTACT / PHONE: Audrey Hannum 4943	CONTRACT PURCHASE ORDER / TASK ORDER NO.: 96SB00217-034
PROJECT NAME: Area 3A/4A Subsurface Prediction	REQUIRED REPORT DATE / LAB TAT: 21 DAYS	RECEIVING LAB NAME: RECRA	SAMPLE SHIPMENT DATE: 9-15-99
PROJECT CONTACT / PHONE: Christine Messerly 4619	RECEIVING LAB ADDRESS: LIONVILLE, PA, 19341	SAMPLE SHIPPER (Print): Ron Houston	OFF-SITE LAB CONTACT: BOB CAREY
CHARGE NO: 51J31	LOT MARKING NO.: NA	SAMPLING TEAM (Print) & GROUP NAME / PHONE: JOYCE GRACE / EM / SMMP / 4848 / Keith Payne / EM 3267 / John Vandine / BB / Minges	
SAMPLING TEAM (Signature & Badge No.): Joyce Grace 10781 / Keith Payne 9388 / Dr. Vandine 5536 / Minges 76551			

ITEM NO.	SAMPLE NUMBER		SAMPLE MATRIX	C P R O C E S S E D	B A R G A N I Z E D	F I L T E R E D	COLLECTION		CONTAINER		NO CONTS	PRESERVATION	A S L	ANALYSES REQUESTED		E	S E R I A L
	FACTS ID	CUSTOMER ID / SAMPLE POINT					DATE	TIME	TYPE	VOL				If more space is required, use the SPECIAL INSTRUCTIONS block.			
1	20036161712483-6B-L	S soil	✓	N	09/13/006	G	60	1	Cool 40C	B	*		Y	Y			
2	2003616133A4A-SUB-TB5	W water	✓	N	09/13/0830	G	40	3	H ₂ SO ₄ pH < 2 Cool 40C	B	*		Y	Y			
3	No samples below this line Jeg 09/13/99																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

SPECIAL INSTRUCTIONS: * TAL I = Total volatiles ** All Trip Blanks have bubbles

RELINQUISHED					RECEIVED				
ITEM / REASON	RELINQUISHED BY (Signature) / AFFILIATION	BADGE NO.	DATE	TIME	RECEIVED BY (Signature) / AFFILIATION	BADGE NO.	DATE	TIME	
1, 2, Release to SPL	R. Ly EM / SMMP?	176551	9/14/99	1307	Karen Heffernan / SPL	17706	9/14/99	1307	
1, 2 TO SHIP	R. Ly EM / SMMP? EM / SMMP? SPL	276719	9-15-99	1300		2			
		3			Jenson	3	9/16/99	0930	
		4				4			
		5				5			

**Recra LabNet Philadelphia
Analytical Report**



Client : TNU-HANFORD B99-085
RFW# : 9909L126
SDG/SAF #: H0535/B99-085

W.O. #: 10985-001-001-9999-00
Date Received: 09-17-99


GC/MS VOLATILE

Two (2) water samples were collected on 09-15-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 09-27,28-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. A non-target compound was detected in method blank 99LVN315-MB1.
4. One (1) of twenty-one (21) surrogate recoveries were outside EPA QC limits. The surrogate recovery for 1,2-Dichloroethane-d4 was biased slightly high, however all spike recoveries were within limits, therefore no significant impact on the data.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank 99LVH374 contained the common laboratory contaminant Methylene Chloride and Acetone at levels less than the CRQL and the target compound 2-Butanone at a level less than the CRQL. The method blank 99LVN315 contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 3x and 1x the CRQL, respectively and target compounds 2-Butanone, Chloromethane and Bromomethane at a level less than the CRQL.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-27-99
Date

som\group\data\ voa\tnu09126.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



	Cust ID:	B0WCP8	B0WCP8	B0WCP8	B0WCP9	VBKRC	VBKSS
RFW#:	001	001 MS	001 MSD	002	99LVH374-MB1	99LVN315-MB1	
Chlorobenzene	5 U	90 %	90 %	5 U	5 U	5 U	
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	
Styrene	5 U	5 U	5 U	5 U	5 U	5 U	
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U	

*= Outside of EPA CLP QC limits.

010

Volatiles by GC/MS, HSL List

000

Client: TNU-HANFORD B99-085

Work Order: 10985001001 Page: 2a

Sample	RFW#:	99LVN315-MB1
Information	Matrix:	WATER
	D.F.:	1.00
	Units:	UG/L

[illegible]

* = Outside of EPA CLP QC limits.

Cust ID: VBLKSS BS

RFW#: 99LVN315-MB1

Chlorobenzene	106	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U

*= Outside of EPA CLP QC limits.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WCP8

Lab Name: Recra.LabNet

Contract: 10985001001

Lab Code: Recra

Case No.: _____

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 9909L126-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: h092735

Level: (low/med) LOW

Date Received: 09/17/99

% Moisture: not dec. _____

Date Analyzed: 09/28/99

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WCP9

Lab Name: Recra.LabNet

Contract: 10985001001

Lab Code: Recra

Case No.: _____

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 9909L126-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: n092836

Level: (low/med) LOW

Date Received: 09/17/99

% Moisture: not dec. _____

Date Analyzed: 09/28/99

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKRC

Lab Name: Recra.LabNet

Contract: 10985001001

Lab Code: Recra

Case No.: _____

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 99LVH374-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: h092726

Level: (low/med) LOW

Date Received: 09/27/99

% Moisture: not dec. _____

Date Analyzed: 09/27/99

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.				

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSS

Lab Name: Recra.LabNet

Contract: 10985001001

Lab Code: Recra

Case No.: _____

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 99LVN315-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: n092821

Level: (low/med) LOW

Date Received: 09/28/99

% Moisture: not dec. _____

Date Analyzed: 09/28/99

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	9.020	6	J

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCP8	001	W	99LVH374	09/15/99	N/A	09/28/99
B0WCP8	001 MS	W	99LVH374	09/15/99	N/A	09/28/99
B0WCP8	001 MSD	W	99LVH374	09/15/99	N/A	09/28/99
B0WCP9	002	W	99LVN315	09/15/99	N/A	09/28/99

LAB QC:

VBLKRC	MB1	W	99LVH374	N/A	N/A	09/27/99
VBLKSS	MB1	W	99LVN315	N/A	N/A	09/28/99
VBLKSS	MB1 BS	W	99LVN315	N/A	N/A	09/28/99

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS[illegible]

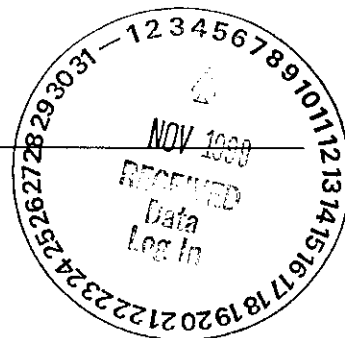
Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-04		Page <u>1</u> of <u>1</u>	
Collector Bowers/Trice		Company Contact C Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa		Sampling Location 200 East		SAF No. B99-085							
Ice Chest No. ERC 96 024		Field Logbook No. EL1511		Method of Shipment Fed Ex							
Shipped To TMA/RECRA 9-15-99		Offsite Property No. A990 259		Bill of Lading/Air Bill No. 4235 7952 9561							
				COA B20CW1 671C							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
Special Handling and/or Storage											

SAMPLE ANALYSIS				Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353 1; Ammonia - 350 3	Semi-VOA - 8270A (TCL)	Gross Alpha, Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) [1- Propanol, Ethanol]	See item (2) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time										
B0WCP8	Water	9.15.99	0650	X	X	X	X		X	X			
B0WCP9	Water	9.15.99	0518						X				

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>Dows Bowers</i> Date/Time <i>9-17-99/1530</i>	Received By <i>REF 10</i> Date/Time <i>9-17-99/1530</i>	<p>(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040</p> <p>(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc) <i>Bz</i></p> <p><i>Samples from non pad area</i></p> <p><i>COLLECTED UNAVAILABLE TO SIGN COC.</i></p>	Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>REF 13</i> Date/Time <i>9/16/99 1300</i>	Received By <i>SJ GALE M/Doh</i> Date/Time <i>9/16/99 1300</i>			
Relinquished By <i>JOANIE M/Doh</i> Date/Time <i>9/16/99 1300</i>	Received By <i>FED EX</i> Date/Time			
Relinquished By <i>FED EX</i> Date/Time <i>9-17-99 1020</i>	Received By <i>TM Murray</i> Date/Time <i>9-17-99 1020</i>			

LABORATORY SECTION	Received By _____ Title _____	Date/Time _____
FINAL SAMPLE DISPOSITION	Disposal Method _____	Disposed By _____ Date/Time _____



**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-085
RFW# : 9909L126
SDG/SAF# : H0535/B99-085

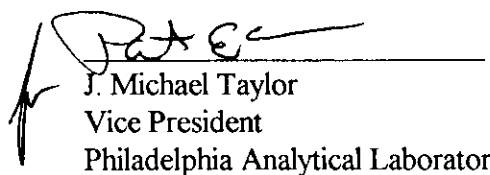
W.O.# : 10985-001-001-9999-00
Date Received: 09-17-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of **13** pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory
mld/m09-126

10-19-99
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L126

Leaching Procedure: 1310 1311 1312 Other: _____

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: ☒3005A 3010A 3015 3020A 3050A 3051 200.7 SS17
 Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Antimony	<u> </u> 6010B <u> </u> 7041 ⁵	<u> </u> 200.7 <u> </u> 204.2			<u> </u> 99
Arsenic	<input checked="" type="checkbox"/> 6010B <u> </u> 7060A ⁵	<u> </u> 200.7 <u> </u> 206.2	<u> </u> 3113B		<u> </u> 99
Barium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Beryllium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Bismuth	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Boron	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Cadmium	<input checked="" type="checkbox"/> 6010B <u> </u> 7131A ⁵	<u> </u> 200.7 <u> </u> 213.2			<u> </u> 99
Calcium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Chromium	<input checked="" type="checkbox"/> 6010B <u> </u> 7191 ⁵	<u> </u> 200.7 <u> </u> 218.2			<u> </u> SS17
Cobalt	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Copper	<input checked="" type="checkbox"/> 6010B <u> </u> 7211 ⁵	<u> </u> 200.7 <u> </u> 220.2			<u> </u> 99
Iron	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Lead	<input checked="" type="checkbox"/> 6010B <u> </u> 7421 ⁵	<u> </u> 200.7 <u> </u> 239.2	<u> </u> 3113B		<u> </u> 99
Lithium	<u> </u> 6010B <u> </u> 7430 ⁴	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Magnesium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Manganese	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Mercury	<u> </u> 7470A ³ <u> </u> 7471A ³	<u> </u> 245.1 ² <u> </u> 245.5 ²			<u> </u> 99
Molybdenum	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Nickel	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Potassium	<u> </u> 6010B <u> </u> 7610 ⁴	<u> </u> 200.7 <u> </u> 258.1 ⁴			<u> </u> 99
Rare Earths	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Selenium	<input checked="" type="checkbox"/> 6010B <u> </u> 7740 ⁵	<u> </u> 200.7 <u> </u> 270.2	<u> </u> 3113B		<u> </u> 99
Silicon	<u> </u> 6010B ¹	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Silica	<u> </u> 6010B	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Silver	<input checked="" type="checkbox"/> 6010B <u> </u> 7761 ⁵	<u> </u> 200.7 <u> </u> 272.2			<u> </u> 99
Sodium	<u> </u> 6010B <u> </u> 7770 ⁴	<u> </u> 200.7 <u> </u> 273.1 ⁴			<u> </u> 99
Strontium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Thallium	<u> </u> 6010B <u> </u> 7841 ⁵	<u> </u> 200.7 <u> </u> 279.2 <u> </u> 200.9			<u> </u> 99
Tin	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Titanium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Uranium	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Vanadium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Zinc	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Zirconium	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/19/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B0WCPS	Silver, Total	1.0	u UG/L	1.0	1.0
		Arsenic, Total	3.3	u UG/L	3.3	1.0
		Barium, Total	0.39	UG/L	0.30	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Chromium, Total	0.80	u UG/L	0.80	1.0
		Copper, Total	1.2	u UG/L	1.2	1.0
		Nickel, Total	1.2	u UG/L	1.2	1.0
		Lead, Total	2.1	u UG/L	2.1	1.0
		Selenium, Total	3.7	u UG/L	3.7	1.0
		Vanadium, Total	0.60	u UG/L	0.60	1.0
		Zinc, Total	0.99	UG/L	0.80	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/19/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	99L0682-MB1	Silver, Total	1.0	u UG/L	1.0	1.0
		Arsenic, Total	3.3	u UG/L	3.3	1.0
		Barium, Total	0.37	UG/L	0.30	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Chromium, Total	0.80	u UG/L	0.80	1.0
		Copper, Total	1.2	u UG/L	1.2	1.0
		Nickel, Total	1.2	u UG/L	1.2	1.0
		Lead, Total	2.1	u UG/L	2.1	1.0
		Selenium, Total	3.7	u UG/L	3.7	1.0
		Vanadium, Total	0.60	u UG/L	0.60	1.0
		Zinc, Total	1.5	UG/L	0.80	1.0

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INORGANICS ACCURACY REPORT 10/19/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-001	B0WCPS	Silver, Total	49.8	1.0 u	50.0	99.6	1.0
		Arsenic, Total	2050	3.3 u	2000	102.5	1.0
		Barium, Total	1980	0.39	2000	99.0	1.0
		Beryllium, Total	50.2	0.10u	50.0	100.4	1.0
		Cadmium, Total	51.0	0.30u	50.0	102.0	1.0
		Chromium, Total	202	0.80u	200	101.2	1.0
		Copper, Total	251	1.2 u	250	100.2	1.0
		Nickel, Total	498	1.2 u	500	99.6	1.0
		Lead, Total	510	2.1 u	500	102.1	1.0
		Selenium, Total	2030	3.7 u	2000	101.6	1.0
		Vanadium, Total	511	0.60u	500	102.3	1.0
		Zinc, Total	501	0.99	500	100.1	1.0

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INORGANICS PRECISION REPORT 10/19/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE RPD		FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	BOWCP8	Silver, Total	1.0 u	1.0 u	NC	1.0
		Arsenic, Total	3.3 u	3.3 u	NC	1.0
		Barium, Total	0.39	1.1	95.3	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	0.80u	0.80u	NC	1.0
		Copper, Total	1.2 u	1.2 u	NC	1.0
		Nickel, Total	1.2 u	1.2 u	NC	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Selenium, Total	3.7 u	3.7 u	NC	1.0
		Vanadium, Total	0.60u	0.65	NC 200	1.0
		Zinc, Total	0.99	1.7	52.8	1.0

Correction
10/19/99

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/19/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SAMPLE	SPIKED AMOUNT	SPIKED UNITS	%RECOV
-----	-----	-----	-----	-----	-----	-----
LCS1	99L0682-LC1	Silver, LCS	497	500	UG/L	99.4
		Arsenic, LCS	10200	10000	UG/L	101.9
		Barium, LCS	5020	5000	UG/L	100.4
		Beryllium, LCS	251	250	UG/L	100.4
		Cadmium, LCS	249	250	UG/L	99.8
		Chromium, LCS	499	500	UG/L	99.8
		Copper, LCS	1250	1250	UG/L	99.7
		Nickel, LCS	2000	2000	UG/L	100
		Lead, LCS	2470	2500	UG/L	98.9
		Selenium, LCS	10200	10000	UG/L	101.8
		Vanadium, LCS	2520	2500	UG/L	100.9
		Zinc, LCS	998	1000	UG/L	99.8

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWCP8						
SILVER, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
SILVER, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
SILVER, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
ARSENIC, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
ARSENIC, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
ARSENIC, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
BARIUM, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
BARIUM, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
BARIUM, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
BERYLLIUM, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
BERYLLIUM, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
BERYLLIUM, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
CADMIUM, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
CADMIUM, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
CADMIUM, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
CHROMIUM, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
CHROMIUM, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
CHROMIUM, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
COPPER, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
COPPER, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
COPPER, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
NICKEL, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
NICKEL, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
NICKEL, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
LEAD, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
LEAD, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
LEAD, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
SELENIUM, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
SELENIUM, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
SELENIUM, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
VANADIUM, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
VANADIUM, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99
VANADIUM, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99
ZINC, TOTAL	001	W	99L0682	09/15/99	10/06/99	10/15/99
ZINC, TOTAL	001 REP	W	99L0682	09/15/99	10/06/99	10/15/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	001 MS	W	99L0682	09/15/99	10/06/99	10/15/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
SILVER, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
ARSENIC LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
ARSENIC, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
BARIUM LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
BARIUM, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
BERYLLIUM LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
BERYLLIUM, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
CADMIUM LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
CADMIUM, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
CHROMIUM LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
CHROMIUM, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
COPPER LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
COPPER, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
NICKEL LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
NICKEL, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
LEAD LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
LEAD, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
SELENIUM LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
SELENIUM, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
VANADIUM LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
VANADIUM, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99
ZINC LABORATORY	LC1 BS	W	99L0682	N/A	10/06/99	10/08/99
ZINC, TOTAL	MB1	W	99L0682	N/A	10/06/99	10/08/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-04		Page <u>1</u> of <u>1</u>	
Collector Bowers/Trice		Company Contact C Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-I OU - QC Sa		Sampling Location 200 East		SAF No. B99-085							
Ice Chest No. ERC 96 024		Field Logbook No. EL1511		Method of Shipment Fed Ex							
Shipped To TMA/RECRA 9-15-99		Offsite Property No. A990 259		Bill of Lading/Air Bill No. 4235 7952 9561							
				COA B20CW1 671C							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			

SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions.			
------------------------	-----------------	---	---	---------------------------	----------------------------	--	---	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time								
B0WCPC8	Water	9.15.99	0650	X	X	X	X		X	X	
B0WCPC9	Water	9.15.99	0518						X		

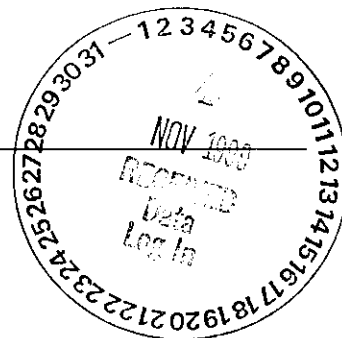
CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <u>Doug Bowers</u> Date/Time <u>9-17-99/1530</u>	Received By <u>Ref 1B</u> Date/Time <u>9-17-99/1530</u>	(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc) <u>Be</u> <u>Samples from non pad area</u> <u>COLLECTED UNAVAILABLE TO SIGN COC.</u>	Soil Water Vapor Other Solid Other Liquid
Relinquished By <u>Ref 1B</u> Date/Time <u>9/16/99 1300</u>	Received By <u>SJ GALE M/Del</u> Date/Time <u>9/16/99 1300</u>		
Relinquished By <u>SJ GALE M/Del</u> Date/Time <u>9/16/99 1300</u>	Received By <u>FED EX</u> Date/Time		
Relinquished By <u>Fed Ex</u> Date/Time <u>9-17-99 1020</u>	Received By <u>TMA/RECRA</u> Date/Time <u>9-17-99 1020</u>		

LABORATORY SECTION	Received By _____ Title _____	Date/Time _____
FINAL SAMPLE DISPOSITION	Disposal Method _____	Disposed By _____ Date/Time _____



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Virtual Laboratories Everywhere



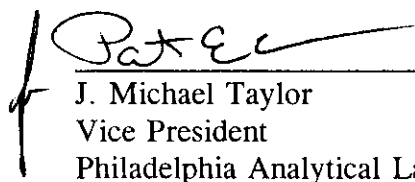
Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9909L126
SDG# : H0535
SAF# : B99-085

W.O. # : 10985-001-001-9999-00
Date Received: 09-17-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.
2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met with the exception of pH, Nitrate, Nitrite and Phosphate which were received past hold.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blanks were within method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicates were within the 20% RPD control limit.
8. The replicate analyses were within the 20% RPD control limit.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-18-99
Date

njp\i09-126

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
Acidity	305.1		
___ Alkalinity ___ Bicarbonate ___ Carbonate	310.1		
BOD	405.1		___ 5210B (b)
Ion Chromatography:			
___ Bromide <input checked="" type="checkbox"/> Chloride <input checked="" type="checkbox"/> Fluoride	<input checked="" type="checkbox"/> 300.0	___ 9056	
<input checked="" type="checkbox"/> Nitrite <input checked="" type="checkbox"/> Nitrate <input checked="" type="checkbox"/> Phosphate	<input checked="" type="checkbox"/> 300.0	___ 9056	
<input checked="" type="checkbox"/> Sulfate ___ Formate ___ Acetate ___ Oxalate	<input checked="" type="checkbox"/> 300.0	___ 9056	
Chloride	325.2	___ 9251	
Chlorine, Residual	330.5 (mod)		
Cyanide, Amenable to Chlorination	335.2	___ 9010B	
Cyanide, Total	335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable			___ 412 (a) ___ 4500CN-I (b)
COD	410.4(mod)		___ 5220C (b)
Color	110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	340.2		___ 4500-FC
Hardness, Calcium	215.2		
Hardness, Total	130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	425.1		
<input checked="" type="checkbox"/> Nitrate-Nitrite ___ Nitrate ___ Nitrite	<input checked="" type="checkbox"/> 353.2		
Ammonia	350.3		
Total ___ Kjeldahl ___ Organic Nitrogen	351.4		
Total ___ Organic ___ Inorganic Carbon	415.1	___ 9060	
Oil & Grease	413.1	___ 9070	
<input checked="" type="checkbox"/> pH ___ pH; paper	150.1	<input checked="" type="checkbox"/> 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	418.1		
Phenol	420.1	___ 420.2 ___ 9065 ___ 9066	
___ Ortho ___ Total Phosphate	365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	160.5		
Sulfide	376.1	___ 376.2 <input checked="" type="checkbox"/> 9030B/9034 (acid soluble)	
Reactive ___ Cyanide ___ Sulfide		___ Section 7.3	
Silica	370.1		
Sulfite	377.1		
Sulfate	375.4	___ 9038	
Specific Conductance	120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach		___ 1312	
Total ___ Dissolved ___ Suspended ___ Solids	160 ___ .1 ___ .2 ___ .3		
Total Organic Halides	450.1	___ 9020B	
Turbidity	180.1		
Volatile Solids:			
___ Total ___ Dissolved ___ Suspended	160.4		
Other:		Method:	

Recra LabNet Philadelphia

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/04/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	BOWCP8	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
		Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
		Ammonia, as N	0.10 u	MG/L	0.10	1.0
		pH	6.5	PH UNITS	0.01	1.0
		Sulfide	1.0 u	MG/L	1.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/04/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	99LICB79-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LICC79-MB1	Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LN3A47-MB1	Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
BLANK10	99LAMA36-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	99LSD047-MB1	Sulfide	1.0 u	MG/L	1.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/04/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-001	BOWCP8	Chloride by IC	5.1	0.00	5.0	101.9	1.0
		Fluoride by IC	10.9	0.00	10.0	109.3	1.0
		Nitrite by IC	5.3	0.25u	5.0	106.1	1.0
		Nitrate by IC	5.1	0.25u	5.0	101.7	1.0
		Phosphate by IC	5.2	0.25u	5.0	103.1	1.0
		Sulfate by IC	5.1	0.25u	5.0	102.2	1.0
		Nitrate Nitrite	0.50	0.02u	0.50	100.8	1.0
		Nitrate Nitrite MSD	0.50	0.02u	0.50	100.2	1.0
		Ammonia, as N	0.95	0.10u	1.0	95.3	1.0
		Sulfide	9.7	0.00	9.9	98.0	1.0
		Sulfide MSD	9.6	0.00	9.9	97.0	1.0
BLANK10	99LICB79-MB1	Chloride by IC	4.9	0.25u	5.0	97.6	1.0
		Fluoride by IC	10.6	0.50u	10.0	105.7	1.0
		Nitrite by IC	4.9	0.25u	5.0	98.4	1.0
		Nitrate by IC	4.9	0.25u	5.0	98.0	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.3	1.0
BLANK10	99LICB79-MB1	Phosphate by IC	5.0	0.25u	5.0	99.1	1.0
BLANK10	99LN3A47-MB1	Nitrate Nitrite	0.50	0.02u	0.50	101.0	1.0
		Nitrate Nitrite MSD	0.51	0.02u	0.50	102.6	1.0
BLANK10	99LAMA36-MB1	Ammonia, as N	1.0	0.10u	1.0	104.0	1.0
		Ammonia, as N MSD	1.0	0.10u	1.0	103.0	1.0
BLANK10	99LSD047-MB1	Sulfide	9.9	1.0 u	9.9	100	1.0
		Sulfide MSD	10.0	1.0 u	9.9	101.0	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 10/04/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-----	-----	-----	-----	-----	-----
-001	BOWCP8	Nitrate Nitrite	100.8	100.2	0.60
		Sulfide	98.0	97.0	1.0
BLANK10	99LN3A47-MB1	Nitrate Nitrite	101.0	102.6	1.6
BLANK10	99LAMA36-MB1	Ammonia, as N	104.0	103.0	0.97
BLANK10	99LSD047-MB1	Sulfide	100	101.0	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/04/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L126

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	BOWCP8	Chloride by IC	0.25u	0.25u	NC	1.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	0.25u	0.25u	NC	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	0.25u	0.25u	NC	1.0
		Nitrate Nitrite	0.02u	0.02u	NC	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0
		Sulfide	1.0 u	1.0 u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWCP8						
CHLORIDE BY IC	001	W	99LICB79	09/15/99	09/23/99	09/23/99
CHLORIDE BY IC	001 REP	W	99LICB79	09/15/99	09/23/99	09/23/99
CHLORIDE BY IC	001 MS	W	99LICB79	09/15/99	09/23/99	09/23/99
FLUORIDE BY IC	001	W	99LICB79	09/15/99	09/23/99	09/23/99
FLUORIDE BY IC	001 REP	W	99LICB79	09/15/99	09/23/99	09/23/99
FLUORIDE BY IC	001 MS	W	99LICB79	09/15/99	09/23/99	09/23/99
NITRITE BY IC	001	W	99LICB79	09/15/99	09/23/99	09/23/99
NITRITE BY IC	001 REP	W	99LICB79	09/15/99	09/23/99	09/23/99
NITRITE BY IC	001 MS	W	99LICB79	09/15/99	09/23/99	09/23/99
NITRATE BY IC	001	W	99LICB79	09/15/99	09/23/99	09/23/99
NITRATE BY IC	001 REP	W	99LICB79	09/15/99	09/23/99	09/23/99
NITRATE BY IC	001 MS	W	99LICB79	09/15/99	09/23/99	09/23/99
PHOSPHATE BY IC	001	W	99LICC79	09/15/99	09/23/99	09/23/99
PHOSPHATE BY IC	001 REP	W	99LICC79	09/15/99	09/23/99	09/23/99
PHOSPHATE BY IC	001 MS	W	99LICC79	09/15/99	09/23/99	09/23/99
SULFATE BY IC	001	W	99LICB79	09/15/99	09/23/99	09/23/99
SULFATE BY IC	001 REP	W	99LICB79	09/15/99	09/23/99	09/23/99
SULFATE BY IC	001 MS	W	99LICB79	09/15/99	09/23/99	09/23/99
NITRATE NITRITE	001	W	99LN3A47	09/15/99	10/01/99	10/01/99
NITRATE NITRITE	001 REP	W	99LN3A47	09/15/99	10/01/99	10/01/99
NITRATE NITRITE	001 MS	W	99LN3A47	09/15/99	10/01/99	10/01/99
NITRATE NITRITE	001 MSD	W	99LN3A47	09/15/99	10/01/99	10/01/99
AMMONIA	001	W	99LAMA36	09/15/99	09/24/99	09/24/99
AMMONIA	001 REP	W	99LAMA36	09/15/99	09/24/99	09/24/99
AMMONIA	001 MS	W	99LAMA36	09/15/99	09/24/99	09/24/99
PH	001	W	99LPH102	09/15/99	09/23/99	09/23/99
SULFIDE	001	W	99LSD047	09/15/99	09/19/99	09/20/99
SULFIDE	001 REP	W	99LSD047	09/15/99	09/19/99	09/20/99
SULFIDE	001 MS	W	99LSD047	09/15/99	09/19/99	09/20/99
SULFIDE	001 MSD	W	99LSD047	09/15/99	09/19/99	09/20/99

LAB QC:

CHLORIDE BY IC	MB1	W	99LICB79	N/A	09/23/99	09/23/99
CHLORIDE BY IC	MB1 BS	W	99LICB79	N/A	09/23/99	09/23/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/17/99

RFW LOT # :9909L126

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	MB1	W	99LICB79	N/A	09/23/99	09/23/99
FLUORIDE BY IC	MB1 BS	W	99LICB79	N/A	09/23/99	09/23/99
NITRITE BY IC	MB1	W	99LICB79	N/A	09/23/99	09/23/99
NITRITE BY IC	MB1 BS	W	99LICB79	N/A	09/23/99	09/23/99
NITRATE BY IC	MB1	W	99LICB79	N/A	09/23/99	09/23/99
NITRATE BY IC	MB1 BS	W	99LICB79	N/A	09/23/99	09/23/99
PHOSPHATE BY IC	MB1	W	99LICC79	N/A	09/23/99	09/23/99
PHOSPHATE BY IC	MB1 BS	W	99LICC79	N/A	09/23/99	09/23/99
SULFATE BY IC	MB1	W	99LICB79	N/A	09/23/99	09/23/99
SULFATE BY IC	MB1 BS	W	99LICB79	N/A	09/23/99	09/23/99
NITRATE NITRITE	MB1	W	99LN3A47	N/A	10/01/99	10/01/99
NITRATE NITRITE	MB1 BS	W	99LN3A47	N/A	10/01/99	10/01/99
NITRATE NITRITE	MB1 BSD	W	99LN3A47	N/A	10/01/99	10/01/99
AMMONIA	MB1	W	99LAMA36	N/A	09/24/99	09/24/99
AMMONIA	MB1 BS	W	99LAMA36	N/A	09/24/99	09/24/99
AMMONIA	MB1 BSD	W	99LAMA36	N/A	09/24/99	09/24/99
SULFIDE	MB1	W	99LSD047	N/A	09/19/99	09/20/99
SULFIDE	MB1 BS	W	99LSD047	N/A	09/19/99	09/20/99
SULFIDE	MB1 BSD	W	99LSD047	N/A	09/19/99	09/20/99

Page 1 of 1

AIN

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

⑧ perrone
wet chem



RECRA
LabNet

E

[illegible]

Special Instructions:

Ref # B99-085

9/23/99 - INH3N added to 001 per client cc.

COMPOSITE WASTE

DATE/REVISIONS:

OGCSC = 1-propanol, Ethanol

met ①₂ = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,

3. Ni, V, Zn, Be

Ans Q4 = ICCL, ICFL, ICNO2, ICNO3, ICPO4,

5. ICSO_4 , IPH , INH_3N

6. Run matrix Q_c

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or
Hand Delivered ☐

Airbill #

2) Ambient or Chilled

3) Received in Good Condition ☒ Y or N

4) Labels Indicate Properly Preserved

Property Preserved (Y) or N

5) Received Within _____

Holding Times α_{H}

AIL Y or (N)

COC Tape was:

1) Present on Outer Package (Y) or N

2) Unbroken on Outer
Package (Y) or N

3) Present on Sample ☒ Y or ☐ N

4) Unbroken on
Sample Y or N

COC Record Present
Upon Sample Rec't

☒ H ☒ (Y) or N
☒ Cooler

Temp. 4.1 °C

Discrepancies Between

Samples Labels and

COC Record? ☒ Y or ☐ N

NOTES: Sulfur bottle \rightarrow 1 L Y or (N)

*-423579529561

Relinquished by	Received by	Date	Time
Fed Ex	TM Murray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-04		Page 1 of 1		012	
Collector Bowers/Trice				Company Contact C Cearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa				Sampling Location 200 East		SAF No. B99-085							
Ice Chest No. ERC 96 024				Field Logbook No. EL1511		Method of Shipment Fed Ex							
Shipped To TMA/RECRA 9-15-99				Offsite Property No. A990 259		Bill of Lading/Air Bill No. 42357952 9561							
						COA B20CW1 671C							
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2	
				Type of Container		P	P	P	aG	P	aGs*	P	
				No. of Container(s)		1	1	1	2	2	3	3	
Special Handling and/or Storage				Volume		500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL	
SAMPLE ANALYSIS						Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha, Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions	
Sample No.		Matrix *		Sample Date		Sample Time							
B0WCP8		Water		9.15.99		0650		X	X	X	X	X	X
B0WCP9		Water		9.15.99		0518						X	
CHAIN OF POSSESSION		Sign/Print Names						SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By Dows Bowers Date/Time 9-15-99/1530		Received By ROF 10 Date/Time 9-15-99/1530						(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc) Bz Samples from non rod area COLLECTED UNAVAILABLE TO SIGN COC.				Soil Water Vapor Other Solid Other Liquid	
Relinquished By REF 1 B Date/Time 9/16/99 1300		Received By SJ GALE Date/Time 9/16/99 1300											
Relinquished By SJ GALE Date/Time 9/16/99 1300		Received By FED EX Date/Time											
Relinquished By FED EX Date/Time 9-17-99 1020		Received By TM Murray Date/Time 9-17-99 1020											
LABORATORY SECTION		Disposal Method						Disposed By				Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method						Disposed By				Date/Time	

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0535 is composed of one liquid (water) sample designated under SAF No. B99-085 with a Project Designation of: 200 Area Source characterization-200-CW-1 OU-QC Sa.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via facsimile on October 28, 1999.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Beta Analyses

No problems were encountered during the course of the analyses.



TMA/RICHMOND

SAMPLE DELIVERY GROUP H0535

SDG 7213

Contact Kevin C. Johnson

SAMPLE SUMMARY

Client Hanford

Contract TRB-SBB-207925

Case no SDG H0535

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF	
				SAMPLE ID	SAF NO	CUSTODY	COLLECTED
B0WCP8	200 East	WATER		N909119-01	B99-085	B99-085-04	09/15/99 06:50
Method Blank		WATER		N909119-03	B99-085		
Lab Control Sample		WATER		N909119-02	B99-085		
Duplicate (N909119-01)	200 East	WATER		N909119-04	B99-085		09/15/99 06:50

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-CS

Version 3.06

Report date 10/28/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0535

QC SUMMARY

SDG 7213
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	DEPARTMENT SAMPLE ID
7213	B99-085-04	B0WCPS	WATER				09/17/99	2	N909119-01 7213-001
		Method Blank	WATER						N909119-03 7213-003
		Lab Control Sample	WATER						N909119-02 7213-002
		Duplicate (N909119-01)	WATER				09/17/99	2	N909119-04 7213-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/28/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0535

SDG 7213

Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client HanfordContract TRB-SBB-207925Case no SDG H0535

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-			
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	FIERS
Gas Proportional Counting												
80A	WATER	Gross Alpha in Water	6904-016	20.0	1			1	1	1/1		
80B	WATER	Gross Beta in Water	6904-016	15.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-PBSVersion 3.06Report date 10/28/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0535

SDG 7213

Contact Kevin C. Johnson

WORK SUMMARY

Client Hanford

Contract TRB-SBB-207925

Case no SDG H0535

CLIENT SAMPLE ID		LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED		SUF-							
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD		
B0WCP8		N909119-01	7213-001	80A/80		10/25/99	10/28/99	NJV	Gross Alpha in Water		
200 East		09/15/99	7213-001	80B/80		10/25/99	10/28/99	NJV	Gross Beta in Water		
B99-085-04	B99-085	09/17/99									
Method Blank		N909119-03	7213-003	80A/80		10/25/99	10/28/99	NJV	Gross Alpha in Water		
			7213-003	80B/80		10/25/99	10/28/99	NJV	Gross Beta in Water		
	B99-085										
Lab Control Sample		N909119-02	7213-002	80A/80		10/25/99	10/28/99	NJV	Gross Alpha in Water		
			7213-002	80B/80		10/25/99	10/28/99	NJV	Gross Beta in Water		
	B99-085										
Duplicate (N909119-01)		N909119-04	7213-004	80A/80		10/25/99	10/28/99	NJV	Gross Alpha in Water		
200 East		09/15/99	7213-004	80B/80		10/25/99	10/28/99	NJV	Gross Beta in Water		
	B99-085	09/17/99									

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
80A/80	B99-085	Gross Alpha in Water	EPA900.0	1			1	1	1		4
80B/80	B99-085	Gross Beta in Water	EPA900.0	1			1	1	1		4
TOTALS				2			2	2	2		8

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-CWS

Version 3.06

Report date 10/28/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

N909119-03

Method Blank

METHOD BLANK

SDG <u>7213</u>	Client/Case no <u>Hanford</u>	SDG <u>H0535</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N909119-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7213-003</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>B99-085</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.321	0.34	1.1	3.0	U	80A
Gross Beta	12587-47-2	-0.325	1.4	2.4	4.0	U	80B

200 Area Source chtztn-200CW-10UQCSa

QC-BLANK 32078

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

Page 7

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/28/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0535

N909119-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7213</u>	Client/Case no <u>Hanford</u>	SDG <u>H0535</u>
Contact <u>Kevin C. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N909119-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7213-002</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>B99-085</u>	

ANALYTE	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS TEST	ADDED pCi/L	2 σ ERR pCi/L	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	61.6	4.9	1.4	3.0	80A	72.0	2.9	86	72-128	80-120
Gross Beta	85.3	3.8	1.9	4.0	80B	83.0	3.3	103	75-125	

200 Area Source chtztn-200CW-10UQCSa

QC-LCS 32077

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 8

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>10/28/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0535

N909119-04

B0WCP8

DUPLICATE

SDG <u>7213</u>	Client/Case no <u>Hanford</u>	SDG <u>H0535</u>
Contact <u>Kevin C. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>N909119-04</u>	Lab sample id <u>N909119-01</u>	Client sample id <u>B0WCP8</u>
Dept sample id <u>7213-004</u>	Dept sample id <u>7213-001</u>	Location/Matrix <u>200 East</u> <u>WATER</u>
	Received <u>09/17/99</u>	Collected <u>09/15/99 06:50</u>
		Custody/SAF No <u>B99-085-04</u> <u>B99-085</u>

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	-0.067	0.31	0.76	3.0	U	80A	-0.123	0.33	0.81	U	-	
Gross Beta	-0.742	1.3	2.3	4.0	U	80B	-0.167	1.2	2.1	U	-	

200 Area Source chtztn-200CW-10UQCSa

QC-DUP#1 32079

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

N909119-01

B0WCP8

D A T A S H E E T

SDG <u>7213</u>	Client/Case no <u>Hanford</u>	SDG <u>H0535</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N909119-01</u>	Client sample id <u>B0WCP8</u>	
Dept sample id <u>7213-001</u>	Location/Matrix <u>200 East</u>	<u>WATER</u>
Received <u>09/17/99</u>	Collected <u>09/15/99 06:50</u>	
	Custody/SAF No <u>B99-085-04</u>	<u>B99-085</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.123	0.33	0.81	3.0	U	80A
Gross Beta	12587-47-2	-0.167	1.2	2.1	4.0	U	80B

200 Area Source chtztn-200CW-10UQCSa

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0535

Test 80A Matrix WATER
SDG 7213
Contact Kevin C. Johnson

METHOD SUMMARY
GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Gross Alpha
------------------	------------------	-----------------	------------------	-------------

Preparation batch 6904-016

BOWCP8	N909119-01	80	7213-001	U
BLK (QC ID=32078)	N909119-03	80	7213-003	U
LCS (QC ID=32077)	N909119-02	80	7213-002	ok
Duplicate (N909119-01)	N909119-04	80	7213-004	- U

Nominal values and limits from method RDLs (pCi/L) 3.0
200 Area Source chtztn-200CW-10UQCSa

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD PREPARED	ANAL- YZED	DETECTOR
------------------	------------------	-----------------	---------------	-----	-----------	-------------	---------------	-------------	----------	--------------	-------------	--------------	-----------------------	---------------	----------

Preparation batch 6904-016 2σ prep error 20.0 % Reference Lab Notebook 6904 pg. 016

BOWCP8	N909119-01	80	0.81	0.300				<u>1</u>	100			40	10/20/99	10/25	GRB-114
BLK (QC ID=32078)	N909119-03	80	1.1	0.300				32	100				10/20/99	10/25	GRB-116
LCS (QC ID=32077)	N909119-02	80	1.4	0.300				36	100				10/20/99	10/25	GRB-115
Duplicate (N909119-01) (QC ID=32079)	N909119-04	80	0.76	0.300				<u>2</u>	100			40	10/20/99	10/25	GRB-112

Nominal values and limits from method 3.0 0.300 5-150 100 180

PROCEDURES REFERENCE EPA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water,
rev 2

AVERAGES ± 2 SD MDA 1.0 ± 0.59
FOR 4 SAMPLES RESIDUE 18 ± 38

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/28/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0535

Test 80B Matrix WATERSDG 7213Contact Kevin C. Johnson

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG H0535

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Gross Beta
------------------	------------------	-----------------	------------------	------------

Preparation batch 6904-016

BOWCP8	N909119-01	80	7213-001	U
BLK (QC ID=32078)	N909119-03	80	7213-003	U
LCS (QC ID=32077)	N909119-02	80	7213-002	ok
Duplicate (N909119-01)	N909119-04	80	7213-004	- U

Nominal values and limits from method RDLs (pCi/L) 4.0

200 Area Source chtztn-200CW-10UQCSa

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA L	ALIQ FAC	PREP TION	DILU- mg	RESID %	EFF min	COUNT keV	FWHM keV	DRIFT HELD	DAYS PREPARED	ANAL- YZED	DETECTOR
------------------	------------------	-----------------	---------------	----------	-------------	--------------	-------------	------------	------------	--------------	-------------	---------------	------------------	---------------	----------

Preparation batch 6904-016 2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 016

BOWCP8	N909119-01	80	2.1	0.300			<u>1</u>	100				40	10/20/99	10/25	GRB-114
BLK (QC ID=32078)	N909119-03	80	2.4	0.300			32	100					10/20/99	10/25	GRB-116
LCS (QC ID=32077)	N909119-02	80	1.9	0.300			36	100					10/20/99	10/25	GRB-115
Duplicate (N909119-01) (QC ID=32079)	N909119-04	80	2.3	0.300			<u>2</u>	100				40	10/20/99	10/25	GRB-112

Nominal values and limits from method 4.0 0.300 5-150 100 180

PROCEDURES	REFERENCE	EPA900.0
	EP-120	Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD	MDA	<u>2.2</u> ± <u>0.44</u>
FOR 4 SAMPLES	RESIDUE	<u>18</u> ± <u>38</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 10/28/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/28/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRE-SBB-207925
Case no SDG H0535

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified.
Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/28/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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SUMMARY DATA SECTION

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Version Ver 1.0
Form DVD-RG
Version 3.06
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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SUMMARY DATA SECTION

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/28/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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SUMMARY DATA SECTION

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG_H0535

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/28/99

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SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRE-SBB-207925
Case no SDG H0535

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 1. A fixed percentage specified in the protocol.

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SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG_H0535

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

REPORT GUIDES

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SUMMARY DATA SECTION

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Report date 10/28/99

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SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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SUMMARY DATA SECTION

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG_H0535

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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SUMMARY DATA SECTION

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Lab id TMANC
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SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

REPORT GUIDES

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SUMMARY DATA SECTION

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0535

SDG 7213
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0535

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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Protocol Hanford
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Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-085-04		Page 1 of 1	
Collector Bowers/Trice		Company Contact C. Clearlock		Telephone No. 372-9574		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days	
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa		Sampling Location 200 East		SAF No. B99-085							
Ice Chest No. ERC 96 087		Field Logbook No. EL 1511		Method of Shipment Fed Ex							
Shipped To TMA/REORA 9-15-99		Offsite Property No. A99 0258		Bill of Lading/Air Bill No. 423579529539							
				COA B20CW1 671C							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
	Special Handling and/or Storage	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			

SAMPLE ANALYSIS				Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha, Gross Beta	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	See item (2) in Special Instructions.			
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Sample No.	Matrix *	Sample Date	Sample Time										
✓ BOWCP8	Water	9.15.99	0650						X				
BOWCP9	Water	9.15.99	0510										

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time	(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc) Samples from nonpod area collector unavailable to sign CAC				Soil Water Vapor Other Solid Other Liquid	
Relinquished By	Date/Time	Received By	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Biehnel Mayford Inc</u>	Date/Time received	<u>9-17-99 11:00</u>	
CoC No. <u>B99-085-04</u>			
Container I.D. No. <u>ERC 96-087</u>	Requested TAT (Days) <u>45</u>	P.O. Received Yes [] No [<input checked="" type="checkbox"/>]	

INSPECTION			
1.	Custody seals on shipping container intact?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
2.	Custody seals on shipping container dated & signed?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
3.	Custody seals on sample containers intact?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
4.	Custody seals on sample containers dated & signed?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
5.	Cooler Temperature: _____	Packing material is:	Wet [] Dry [<input checked="" type="checkbox"/>]
6.	Number of samples in shipping container: <u>1</u>		
7.	Number of containers per sample: <u>2</u> (Or see CoC _____)		
8.	Paperwork agrees with samples?	Yes [<input checked="" type="checkbox"/>]	No []
9.	Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels [<input checked="" type="checkbox"/>]		
10.	Samples are: In good condition [<input checked="" type="checkbox"/>] Leaking [] Broken Container [] Missing []		
11.	Describe any anomalies: _____ _____ _____ _____		
13.	Was P.M. notified of any anomalies? Yes [] No [] Date _____		
14.	Received by <u>M. Goldenberg</u> Date: <u>9-17-99</u> Time: <u>11:00</u>		

LOGIN		
TNU W.O. No. _____	Group No. _____	Client W.O. No. _____

PROGRAM MANAGER	
Sample holding times exceeded?	Yes [] No []
Client Notified: Name _____	Date/time _____